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EXAMINER				
BERNATZ, KEVIN M				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/529,044

**Applicant(s)**

KIM ET AL.

**Examiner**

Kevin M. Bernatz

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-850)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 3/24/05; 3/21/07; 6/6/08

## **DETAILED ACTION**

### ***Response to Amendment***

1. Preliminary amendments to the claims, filed on March 24, 2005, have been entered in the above-identified application.

### ***Drawings***

2. The drawings were received on March 24, 2005. These drawings are accepted.
3. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Priority***

4. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Japan on September 26, 2002. It is noted, however, that applicant has not filed a certified copy of the above noted application as required by 35 U.S.C. 119(b). Since the above identified application is a 371 of a PCT application,

Applicants are requested to either submit a certified copy of the above identified priority document(s), or provide a copy of the ribbon cover page of the priority document(s) submitted to the WO.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1 – 3 and 5 – 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "high melting point" in claims 1 – 3 and 5 - 11 is a relative term which render the claims indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of evaluating the prior art, the Examiner has interpreted any metal oxide as having a "high" melting point, given that these melting points will be well above room temperature.

The term "nearly" in claim 2 is a relative term which renders the claim indefinite. The term "nearly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purposes of evaluating the prior art, the Examiner has taken any WO<sub>x</sub> layer as meeting the claimed

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limitations.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

8. Claims 1, 3, 5 and 7 – 11 are rejected under 35 U.S.C. 102(a), (b), and/or (e) as being anticipated by Moritani et al. (U.S. Patent No. 6,411,591 B1 and/or WO 99/14764). See US '591 B1, which is the US equivalent of WO '764.

Regarding claims 1, 3 and 8, Moritani et al. disclose a high density recording medium with super-resolution near field structure (*Figure 2*) including a sequential stack of a second recording layer (*Figure 2, element 6 or 6'*), a recording layer (*element 5 or 5'*), a protective layer (*element 4 or 4'*), a mask layer (*element 3 or 3'*), a first dielectric

layer (*element 2 or 2'*) and a polycarbonate layer (*element 1 or 1' and col. 5, lines 6 – 27*), wherein the mask layer comprises a “high melting point” metal oxide (*col. 9, line 57 bridging col. 10, line 2; e.g. at least SiO<sub>x</sub> and/or AuO<sub>x</sub>*) to generate a near field by optically or thermally inducing physical changes in the crystalline structure and optical properties of the “high melting point” metal oxide (*col. 1, line 40 bridging col. 3, line 53*).

Regarding claims 5, 7 and 10, Moritani et al. disclose reflective layers meeting Applicants' claimed limitations (*Figure 2, elements 7 or 7' and relevant disclosure thereto*).

Regarding claims 9 and 11, Moritani et al. disclose using films which include SiO<sub>x</sub>, as noted above. Regarding the limitation “shows irreversible physical changes”, it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prima facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing

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that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the Examiner deems that since substantially identical materials (*i.e.*  $\text{SiO}_x$ ) are being used for substantially identical purposes (*i.e.* as a mask layer for a super-resolution near-field structure), there is **sound basis** that the  $\text{SiO}_x$  used in such an embodiment would necessarily meet Applicants' claimed material and property limitations.

9. Claim 1 is rejected under 35 U.S.C. 102(a) (b), and/or (e)) as being clearly anticipated by any of the following: IDS reference to Lin et al. (2002 *IEEE journal article titled "Study of a super-resolution optical structure: polycarbonate/ZnS-SiO<sub>2</sub>/ZnOx/ZnS-SiO<sub>2</sub>/Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>3</sub>/ZnS-SiO<sub>2</sub>"*), IDS journal article to Fuji et al. (*Jpn. J. Appl. Phys.*, v39, 2000, pp 980 – 981), Tseng et al. (U.S. Patent No. 6,506,543 B1), and/or Chen (U.S. Patent App. No. 2003/0228462 A1).

The Examiner notes all of the above clearly disclose super-resolution near-field structures meeting Applicants' claimed structural limitations with a "high melting point" metal oxide layer as the mask layer (*see definition given "high melting point" in Paragraph No. 5, above*).

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moritani et al. as applied above, and further in view of IDS reference to Bussjager et al. (Jpn. J. Phys., 39, 2000, 789 – 796).

Moritani et al. is relied upon as described above.

Moritani et al. fail to disclose using a mask layer of WO<sub>x</sub> meeting Applicants' claimed material property limitations, though the Examiner notes that Moritani et al. disclose a wide range of metal oxides as suitable for the mask layer.

However, the Examiner deems that one of ordinary skill in the art would have been readily appraised of the functional use of the metal oxide WO<sub>x</sub> for use as a mask layer, given both the teachings in Bussjager et al. regarding the use of WO<sub>x</sub> within optical media, wherein the WO<sub>x</sub> exhibits a photochromic chemical change upon excitation (*Abstract and entire journal reference*), and also given that WO<sub>x</sub> is similar to the other metal oxides disclosed by the Moritani et al. reference. Applicants reminded that one of ordinary skill in the art would be motivated to make and use the claimed WO<sub>x</sub> metal oxide in searching for an improved metal oxide based mask layer. The necessary motivation rises from ***the expectation that similar compounds will have similar properties***. *In re Payne*, 606 F.2d 303, 203 USPQ 245 (CCPA 1979).



It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicant(s) invention to modify the device of Moritani et al. to use a WO<sub>x</sub> mask layer as taught by Bussjager et al., as well as merely being within the knowledge of one of ordinary skill in the art given the expectation that similar compounds will have similar properties.

12. Claims 3, 5 and 7 – 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over IDS reference to Lin et al. (2002 *IEEE journal article titled "Study of a super-resolution optical structure: polycarbonate/ZnS-SiO<sub>2</sub>/ZnOx/ZnS-SiO<sub>2</sub>/Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>3</sub>/ZnS-SiO<sub>2</sub>"*), IDS journal article to Fuji et al. (*Jpn. J. Appl. Phys.*, v39, 2000, pp 980 – 981), Tseng et al. ('543 B1), and/or Chen ('462 A1) as applied above, and further in view of Moritani et al. ('591 B1 and/or WO '764).

Lin et al., Fuji et al., Tseng et al. and/or Chen are relied upon as described above.

None of the above disclose using the claimed metal oxides, nor a structure necessarily including a reflective layer meeting Applicants' claimed limitations.

However, Moritani et al. teach the functional equivalents between the disclose metal oxides in the prior art and the claimed metal oxides (*col. 9, line 57 bridging col. 10, line 2*), as well as the knowledge in the art that reflective layers meeting Applicants' claimed material limitations can be added within the optical medium structure to assist in the focusing and behavior of the irradiated light beam (*Figure 2, elements 7 and 7', and relevant disclosure thereto*).

Regarding the limitation "shows irreversible physical changes", it has been held that where claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a *prima facie* case of either anticipation or obviousness has been established and the burden of proof is shifted to applicant to show that prior art products do not necessarily or inherently possess characteristics of claimed products where the rejection is based on inherency under 35 USC 102 or on *prima facie* obviousness under 35 USC 103, jointly or alternatively. Therefore, the *prima facie* case can be rebutted by **evidence** showing that the prior art products do not necessarily possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). "When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not." *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

In the instant case, the Examiner deems that since substantially identical materials (*i.e.*  $AuO_x$  and  $SiO_x$ ) are being used for substantially identical purposes (*i.e.* *as a mask layer for a super-resolution near-field structure*), there is **sound basis** that the  $AuO_x$  and  $SiO_x$  used in such an embodiment would necessarily meet Applicants' claimed material and property limitations.

It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the device of Lin et al., Fuji et al., Tseng et al., and/or Chen to utilize metal oxides meeting Applicants' claimed material and property

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limitations as taught by Moritani et al., as well as reflective layers meeting Applicants' claimed material and property limitations, since such materials are well established in the art for the claimed structure. Furthermore, substitution of functional equivalents requires no express motivation as long as the prior art recognizes the functional equivalency. In the instant case, the various disclosed and claimed metal oxides are functional equivalents in the field of metal oxides usable as mask layers in a super-resolution near-field structure. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Linde Air Products Co.* 85 USPQ 328 (USSC 1950).

13. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over IDS reference to Lin et al. (2002 IEEE journal article titled "Study of a super-resolution optical structure: polycarbonate/ZnS-SiO<sub>2</sub>/ZnOx/ZnS-SiO<sub>2</sub>/Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>3</sub>/ZnS-SiO<sub>2</sub>"), IDS journal article to Fuji et al. (*Jpn. J. Appl. Phys.*, v39, 2000, pp 980 – 981), Tseng et al. ('543 B1), and/or Chen ('462 A1) as applied above, and further in view of IDS reference to Bussjager et al. (*Jpn. J. Phys.*, 39, 2000, 789 – 796).

Lin et al., Fuji et al., Tseng et al. and/or Chen are relied upon as described above.

None of the above disclose using a mask layer of WO<sub>x</sub> meeting Applicants' claimed material property limitations, though the Examiner notes that Moritani et al. disclose a wide range of metal oxides as suitable for the mask layer.

However, the Examiner deems that one of ordinary skill in the art would have been readily appraised of the functional use of the metal oxide WO<sub>x</sub> for use as a mask layer, given both the teachings in Bussjager et al. regarding the use of WO<sub>x</sub> within optical media, wherein the WO<sub>x</sub> exhibits a photochromic chemical change upon excitation (*Abstract and entire journal reference*), and also given that WO<sub>x</sub> is similar to the other metal oxides disclosed by the Moritani et al. reference. Applicants reminded that one of ordinary skill in the art would be motivated to make and use the claimed WO<sub>x</sub> metal oxide in searching for an improved metal oxide based mask layer. The necessary motivation rises from ***the expectation that similar compounds will have similar properties***. *In re Payne*, 606 F.2d 303, 203 USPQ 245 (CCPA 1979). It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicant(s) invention to modify the device of Moritani et al. to use a WO<sub>x</sub> mask layer as taught by Bussjager et al., as well as merely being within the knowledge of one of ordinary skill in the art given the expectation that similar compounds will have similar properties.

14. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over IDS reference to Lin et al. (2002 IEEE journal article titled "Study of a super-resolution optical structure: polycarbonate/ZnS-SiO<sub>2</sub>/ZnOx/ZnS-SiO<sub>2</sub>/Ge<sub>2</sub>Sb<sub>2</sub>Te<sub>3</sub>/ZnS-SiO<sub>2</sub>"), IDS journal article to Fuji et al. (*Jpn. J. Appl. Phys.*, v39, 2000, pp 980 – 981), Tseng et al. ('543 B1), and/or Chen ('462 A1) in view of IDS reference to Bussjager et al. (*Jpn. J. Phys.*, 39, 2000, 789 – 796 as applied above in Paragraph No. 13, and further in view of Moritani et al. ('591 B1 and/or WO '764).

Lin et al., Fuji et al., Tseng et al., Chen and Bussjager et al. are relied upon as described above.

None of the above disclose a structure necessarily including a reflective layer meeting Applicants' claimed limitations.

However, Moritani et al. teach that it is known in the art to use reflective layers meeting Applicants' claimed material limitations, since they can be added within the optical medium structure to assist in the focusing and behavior of the irradiated light beam (*Figure 2, elements 7 and 7', and relevant disclosure thereto*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the Applicants' invention to modify the device of Lin et al., Fuji et al., Tseng et al., and/or Chen in view of Bussjager et al. to utilize reflective layers meeting Applicants' claimed material and property limitations, since such materials are well established in the art for the claimed structure.

### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to Applicants' disclosure. Kim et al. (U.S. Patent App. No. 2005/0249065) teach a super-resolution near-field structure utilizing W, Ta or a W or Ta compound (*Paragraph 0029*) for the recording layer in such a structure (*Paragraph 0001 – 0020*). However, the Examiner notes that US '065 A1 is not "by another" and does not qualify as prior art. Kim et al. (U.S. Patent No. 7,166,346 B2) disclose a mask layer formed of metal oxide particles, including WO<sub>x</sub> and AuO<sub>x</sub> (*see claims*), but does not qualify as prior art due to the filing date of US '346 B2 (*and the equivalent WO document*) being after the pending Application. The Examiner notes that no double patenting rejection has been made between the pending Application and US '346 B2, since the Examiner deems there is sufficient difference in structure of the super-resolution near-field structure to render the claims patentably distinct (*at least for now*).

16. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The Examiner can normally be reached on M-F, 8:30 AM - 5:00 PM.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Rena Dye can be reached on (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Bernatz, PhD/  
Primary Examiner, Art Unit 1794

September 29, 2008